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PUBLISHED SEPARATELY:

Flood Insurance Rate Map Index
Flood Insurance Rate Map

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FLOOD INSURANCE STUDY
CITY OF GREENSBURG, PENNSYLVANIA

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study investigates the existence and severity of flood hazards in the City of Greensburg, Westmoreland County, Pennsylvania, and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This study has developed flood risk data for various areas of the community that will be used to establish actuarial flood insurance rates and assist the community in their efforts to promote sound flood plain management. Minimum flood plain management requirements for participation in the National Flood Insurance Program are set forth in the Code of Federal Regulations at 44 CFR, 60.3.

In some states or communities, flood plain management criteria or regulations may exist that are more restrictive or comprehensive than the minimum Federal requirements. In such cases, the more restrictive criteria take precedence and the state (or other jurisdictional agency) will be able to explain them.

1.2 Authority and Acknowledgments

The sources of authority for this Flood Insurance Study are the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

The hydrologic and hydraulic analyses in this study represent a revision of the original analyses by Michael Baker, Jr., Inc., for the Federal Emergency Management Agency (FEMA), under Contract No. H-3812. The work for the original study was completed in May 1977. The updated version was prepared by the Pittsburgh District of the U. S. Army Corps of Engineers (COE) during the preparation of a Flood Plain Information report for Upper Sewickley Creek Basin. The work for this updated study was completed in October 1980.

1.3 Coordination

The identification of streams for detailed and approximate study were selected and agreed upon by representatives of the City of Greensburg, FEMA, and Michael Baker, Jr., Inc. (the study contractor) at the initial Consultation and Coordination Officer's (CCO) meeting on September 17, 1975.

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The following agencies were contacted for coordination of mapping and hydrologic and hydraulic information during the course of this study: the Pittsburgh District of the COE, the Pennsylvania Department of Community Affairs, the Pittsburgh Regional Office, the Westmoreland County Planning Commission, the Chester Engineers, and the Pennsylvania Department of Environmental Resources.

The city provided historical information and a street map to aid in the preparation of this study. City officials were informed of progress throughout the course of the study.

The final CCO meeting was held on July 19, 1977, to review the results of the study. This meeting was attended by representatives of the city, FEMA, the study contractor, and interested citizens.

2.0 AREA STUDIED

2.1 Scope of Study

This Flood Insurance Study covers the incorporated area of the City of Greensburg, Westmoreland County, Pennsylvania. Not included in this study are the three small areas of land that are located within the corporate boundaries of Greensburg, which are part of the Township of Hempfield. The area of study is shown on the Vicinity Map (Figure 1).

Zeller's Run and portions of Tributary No. 5 were studied by detailed methods in the original study and were not revised in this updated study. The limits of detailed study for those portions studied in the original study are as follows:

> Zeller's Run, from the corporate limits approximately 0.91 mile upstream from its mouth to a point at the second intersection of the corporate limits approximately 1.31 miles upstream from its mouth and from a point at the third intersection of the corporate limits approximately 1.46 miles upstream from its mouth to a point at the fourth intersection of the corporate limits approximately 1.60 miles upstream from its mouth for a total length of 0.54 miles.
>
> Tributary No. 5, from the fourth intersection of the corporate limits approximately 1.08 miles upstream from its mouth to a point 1.53 miles upstream from its mouth for a total length of 0.83 mile.

Jack's Run and portions of Tributary No. 5 were studied by detailed methods in the original study and were revised in this updated study.

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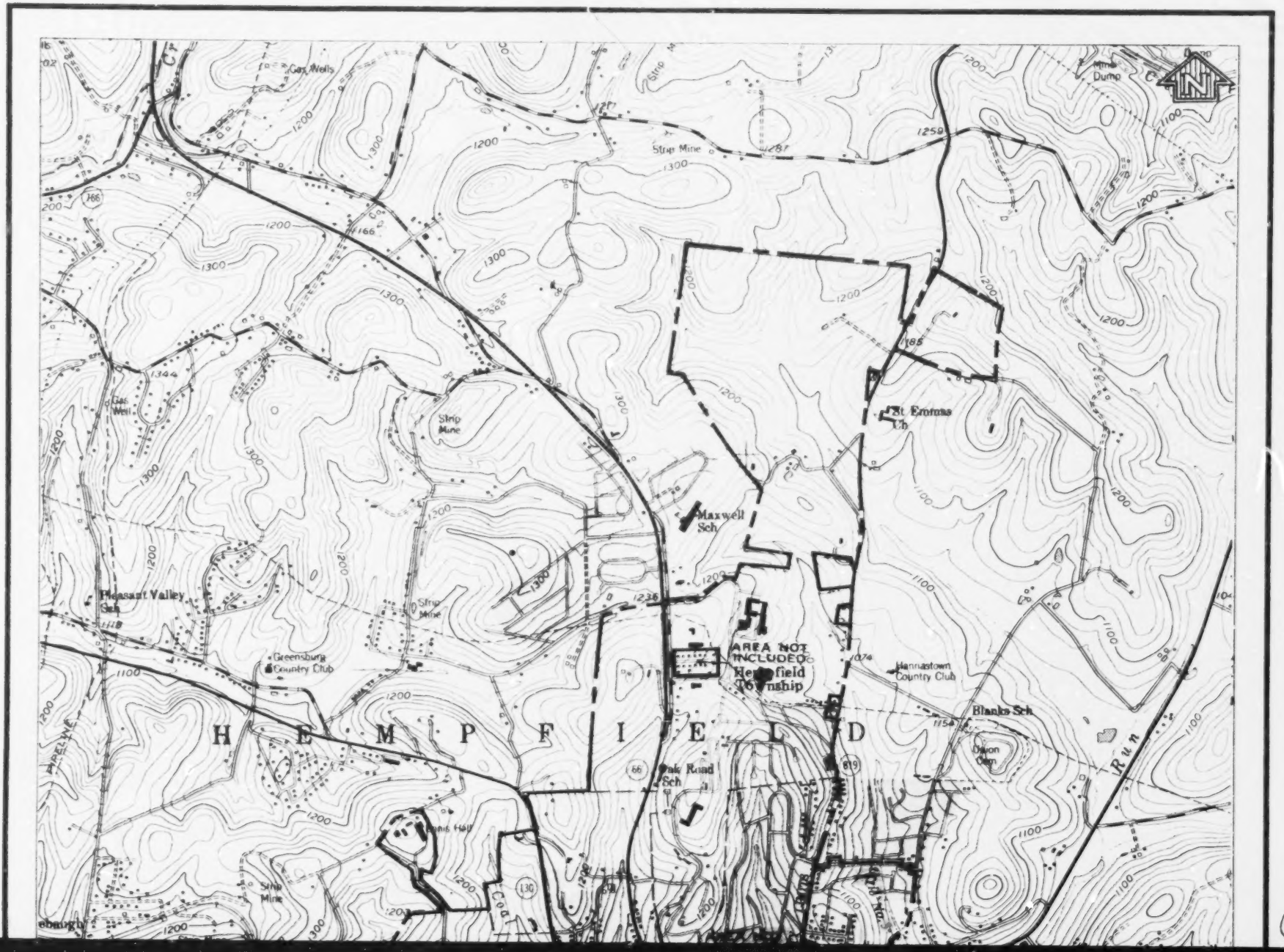
Gas Wells
Strip Mine
Mine Dump
Strip Mine
St. Emma's Ch
Maxwell Sch
Strip Mine
Pleasant Valley Sch
Strip Mine
Greensburg Country Club
AREA NOT INCLUDED Hempfield Township
Hannastown Country Club
Blanks Sch
Oak Road Sch
H E M P F I E L D
Run
Strip Mine
Coal

3

FIGURE 1

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF GREENSBURG, PA

(WESTMORELAND CO.)

APPROXIMATE SCALE

2000 0 2000 4000 6000 FEET

VICINITY MAP

The limits of detailed study for those portions revised in this study are as follows:

Jack's Run, for its entire stream length within the community.

Tributary No. 5, from its confluence with Jack's Run to the third intersection of the corporate limits approximately 0.5 miles from its confluence.

The streams revised in this study were changed to incorporate a more up-to-date analyses.

The areas studied by detailed methods were selected with priority given to all known flood hazard areas and areas of projected development and proposed construction.

Coal Tar Run, Slate Creek, the tributary of Coal Tar Run, and the unnamed tributaries of Jack's Run were studied by approximate methods. These streams have watersheds of less than 1 square mile, which generate insufficient volumes of water to produce more than shallow flooding and, therefore, were studied by approximate methods in accordance with FEMA directives. Approximate analyses were used to study those areas having a low development potential or minimal flood hazards. The scope and methods of study were proposed to, and agreed upon by, FEMA and the City of Greensburg.

2.2 Community Description

The City of Greensburg is located in the central portion of Westmoreland County in southwest Pennsylvania, approximately 25 miles east of Pittsburgh. It is bordered by the Township of Hempfield to the north, east, and west; and the Borough of South Greensburg and the Borough of Southwest Greensburg to the south. The 1970 population of Greensburg was 17,077, a decrease of two percent from the 1960 population (Reference 1). Jack's Run is the major stream within the city. It enters the city on its eastern boundary and proceeds in a southwestern direction to the CONRAIL culvert and then proceeds in a southern direction through the city.

The City of Greensburg was incorporated in 1926 and serves as the county seat of Westmoreland County. Greensburg is generally favored with good transportation. The old Conestoga wagon roads, such as the Pittsburgh Turnpike, have been replaced by modern highways such as U. S. Routes 22 and 30 and the Pennsylvania Turnpike.

Originally, the Greensburg area was a center of operations for many major coal companies; however, with the decline of the coal industry, it has taken on a different role. Greensburg now serves as a residential, medical, and professional hub for the county.

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The climate of the City of Greensburg is the humid, continental type that is characterized by warm summers and cold winters. Annual precipitation is normally approximately 40 inches, of which nearly half falls between May and September. Temperatures range from lows of 0 degrees Fahrenheit (°F) to highs of 90°F, with an annual average of 50°F (Reference 2).

The study area encompasses 3.5 square miles ranging from elevations of 1,000 feet to over 1,200 feet in the highest part of the city.

The City of Greensburg is situated in the unglaciated Allegheny Plateau Physiographic Province. The Westmoreland-Guernsey-Clarksburg soil association dominates this area and is characterized as deep and moderately deep, somewhat poorly drained soils over interbedded sandstone, shale, and limestone (Reference 3). The slow infiltration capabilities of these soils are conducive to runoff. The watershed is characterized by tree covered hills and grass lined valleys in the headwaters draining to the highly developed areas in the City of Greensburg.

The major source of employment in the township is manufacturing, mostly of primary metals and durables. Agriculture uses large amounts of land, specifically for dairy farms. Coal mining was formerly one of the most important occupations in the township. There is a large degree of development adjacent to Jack's Run and Zeller's Run in Greensburg. This is mostly residential with some commercial development. The flood plain of Tributary No. 1 has some scattered residential developement and a large recreational area.

2.3 Principal Flood Problems

The flooding of Jack's Run is the principal flood problem in the City of Greensburg. The channelization of a portion of Jack's Run within the city has eliminated a large part of the annual spring flooding; however, it is still not adequate for severe floods. A particular problem presently on Jack's Run is near Lynch Field, which is located upstream of the channelization project. This portion overtops its banks annually, particularly at the confluence with Tributary No. 5, and aggravates the flooding problem on the tributary.

The 1954 and 1972 floods were the largest floods in the study area in the past 60 years. Other floods occurred in 1936, 1951, 1963, and March 1964. There are no frequencies or estimates of damages available for these floods.

Slate Creek near Mount Pleasant Street also floods frequently during a severe rainstorm.

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2.4 Flood Protection Measures

The Commonwealth of Pennsylvania has constructed a channelization project in Greensburg on Jack's Run that extends from below its downstream corporate limits to the CONRAIL culvert north of Pittsburgh Street. This consists of channel realignment, straightening, concrete channelization, and earthen trapezoidal channel. This will contain approximately a 50-year flood.

Coal Tar Run is a stone-lined tunnel for 0.8 mile extending from its confluence with Jack's Run to the upstream side of the CONRAIL embankment.

Flood protection projects have been proposed for Tributary No. 5 of Jack's Run and Slate Creek near Mount Pleasant Street by the Commonwealth of Pennsylvania Department of Environmental Resources (References 4 and 5). At the present time, there are no funds allocated or anticipated to be allocated for these projects.

At the time of this report, no other flood protection projects affecting flooding within the city are existing or proposed within the near future.

3.0 ENGINEERING METHODS

For the flooding sources studied in detail in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude which are expected to be equaled or exceeded once on the average during any 10-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for flood plain management and for flood insurance rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10, 2, 1, and 0.2 percent chance, respectively, of being equaled or exceeded during any year. Although the recurrence interval represents the long term average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood which equals or exceeds the 100-year flood (1 percent chance of annual exceedence) in any 50-year period is approximately 40 percent (4 in 10), and, for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak discharge-frequency relationships for each flooding source studied in detail affecting the community.

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The flood flows for Zeller's Run and portions of Tributary No. 5 studied in the original study were determined using the PSU III, Flood Peak Frequency Design Manual (Reference 6).

In the upated study, the hydrologic analyses for Jack's Run and the remaining portions of Tributary No. 5 were taken using the COE publication for Upper Sewickley Creek Basin (Reference 7). The computations for these flood plain analyses involved determination of stream flow hydrographs for selected storm events and the development of exceedence frequency curves at selected locations of interest. The methodology included application of synthetic storm precipitation data to a hydrologic watershed model that had been calibrated from past flood data. The peak discharges were computed using the COE HEC-1 computer program (Reference 8).

A summary of the drainage area-peak discharge relationships for the streams studied by detailed methods is shown in Table 1, "Summary of Discharges."

TABLE 1 - SUMMARY OF DISCHARGES

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-YEAR	50-YEAR	100-YEAR	500-YEAR
JACK'S RUN					
At the confluence of Coal Tar Run	7.23	920	1,440	1,680	2,600
At the confluence of Tributary No. 5	4.93	680	1,060	1,230	1,920
ZELLER'S RUN					
At the corporate limits downstream of cross section A	1.15	385	570	645	845
At U. S. Route 30 on Ramp	0.62	235	350	395	520
TRIBUTARY NO. 5					
At the confluence with Jack's Run	2.59	140	220	250	390

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals.

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All stream cross sections, bridge and culvert geometries, and reference marks were field surveyed. Cross sections were located at close intervals above and below bridges and culverts in order to compute the significant backwater effects of these structures.

Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway was computed (Section 4.2), selected cross section locations are also shown on the Flood Boundary and Floodway Map (Exhibit 2).

Channel roughness factors (Manning's "n") for the streams studied by detailed methods were determined by field inspection of the flood plain areas and comparison with similar streams of known roughness (Reference 9). The channel "n" and overbank "n" values for the streams studied by detailed methods are shown in the following tabulation:

Stream	Channel "n"	Overbank "n"
Jack's Run	0.012-0.060	0.012-0.100
Zeller's Run	0.025-0.050	0.080-0.110
Tributary No. 5	0.027-0.045	0.070-0.080

Water-surface elevations of floods of the selected recurrence intervals were computed using the COE HEC-2 step-backwater computer program (Reference 10). Flood profiles were drawn showing computed water-surface elevations for floods of the selected recurrence intervals.

Starting water-surface elevations for Jack's Run and Zeller's [illegible]re calculated using the slope/area method. Coincidental floodin[illegible]as justified in the Upper Sewickley Creek Basin, resulting in [illegible]e starting water-surface elevations for Tributary No.5 being taken from the main stream elevation at its confluence.

All elevations are referenced to the National Geodetic Vertical Datum of 1929 (NGVD). Elevation reference marks used in this study are shown on the maps.

The hydraulic analyses for this study were based on unobstructed flow. The flood elevations shown on the profiles are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

4.0 FLOOD PLAIN MANAGEMENT APPLICATIONS

The National Flood Insurance Program encourages State and local governments to adopt sound flood plain management programs. Therefore, each Flood Insurance

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Study produces maps designed to assist communities in developing flood plain management measures.

4.1 Flood Boundaries

To provide a national standard without regional discrimination, the 1 percent annual chance (100-year) flood has been adopted by FEMA as the base flood for flood plain management purposes. The 0.2 percent annual chance (500-year) flood is employed to indicate additional areas of flood risk in the community. For each stream studied in detail, the 100- and 500-year flood plain boundaries have been delineated using the flood elevations determined at each cross section. Between cross sections, the boundaries were interpolated using topographic maps (Reference 11).

The flood boundaries for the streams in the updated study were delineated using maps supplied by the COE (Reference 12).

For the streams studied by approximate methods, the 100-year flood plain boundaries were delineated using topographic maps, field investigations, and engineering judgment (Reference 11).

The 100- and 500-year flood plain boundaries are shown on the Flood Boundary and Floodway Map (Exhibit 2). In cases where the 100- and 500-year flood plain boundaries are close together, only the 100-year flood plain boundary has been shown. Small areas within the flood plain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

4.2 Floodways

Encroachment on flood plains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of flood plain management involves balancing the economic gain from flood plain development against the resulting increase in flood hazard. For purposes of the National Flood Insurance Program, a floodway is used as a tool to assist local communities in this aspect of flood plain management. Under this concept, the area of the 100-year flood plain is divided into a floodway and a floodway fringe. The floodway is the channel of a stream, plus any adjacent flood plain areas, that must be kept free of encroachment so that the 100-year flood can be carried without substantial increases in flood heights. Minimum federal standards limit such increases to 1.0 foot, provided that hazardous velocities are not produced. The floodways in this study are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway studies.

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The floodways presented in this study were computed on the basis of equal conveyance reduction from each side of the flood plain. The results of these computations are tabulated at selected cross sections for each stream segment for which a floodway is computed (Table 2).

As shown on the Flood Boundary and Floodway Map (Exhibit 2), the floodway boundaries were computed at cross sections. Between cross sections, the boundaries were interpolated. In cases where the floodway and 100-year flood plain boundaries are either close together or collinear, only the floodway boundary has been shown.

In the updated study, the floodway for Jack's Run was taken from the COE Flood Plain Information study (Reference 7). The floodway for Jack's Run was computed since it was felt that the impacts from development would be significant on this stream. A floodway was not computed for Tributary No. 5; hence, the floodway delineated for the revised portion of this stream was taken from the previously effective study for the City of Greensburg (Reference 13). Cross sectional information was not available in the COE study; therefore, there are no cross sections delineated and no Floodway Data Tables produced for the revised streams in this updated study.

The area between the floodway and 100-year flood plain boundaries is termed the floodway fringe. The floodway fringe encompasses the portion of the flood plain that could be completely obstructed without increasing the water-surface elevation of the 100-year flood by more than 1.0 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to flood plain development are shown in Figure 2.

5.0 INSURANCE APPLICATION

To establish actuarial insurance rates, data from the engineering study must be transformed into flood insurance criteria. This process includes the determination of reaches, Flood Hazard Factors, and flood insurance zone designations for each flooding source studied in detail in the City of Greensburg.

5.1 Reach Determinations

Reaches are defined as sections of flood plain that have relatively the same flood hazard, based on the average weighted difference in water-surface elevations between the 10- and 100-year floods. This difference may not have a variation greater than that indicated in the following tabulation for more than 20 percent of the reach:

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FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Zeller's Run								
A	5,414[1]	33	101	6.4	1,035.4	1,035.4	1,035.4	0.0
B	6,384[1]	24	96	4.1	1,046.3	1,046.3	1,046.7	0.4
C	7,819[1]	48	229	2.5	1,069.7	1,069.7	1,070.4	0.7
Tributary No. 5								
A	*	*	*	*	*	*	*	*
B	*	*	*	*	*	*	*	*
C	5,915[1]	55	294	2.9	1,070.0	1,070.0	1,071.0	1.0
D	6,730[1]	44	119	8.2	1,079.7	1,079.7	1,080.0	0.3
E	7,471[1]	51	108	10.8	1,094.2	1,094.2	1,094.7	0.5
F	8,071[1]	49	101	8.5	1,108.4	1,108.4	1,108.7	0.3

[1]Feet above mouth

*Data not available

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF GREENSBURG, PA
(WESTMORELAND CO.)

FLOODWAY DATA

ZELLER'S RUN - TRIBUTARY NO. 5

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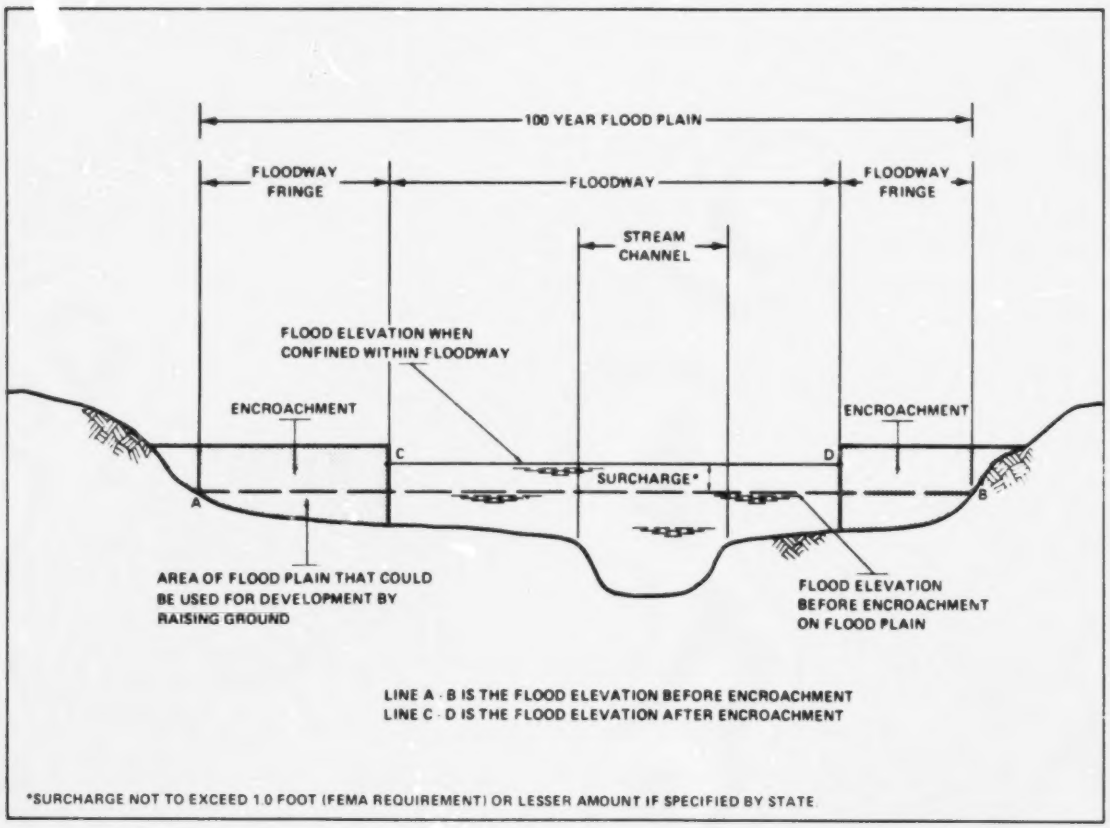
100 YEAR FLOOD PLAIN
FLOODWAY FRINGE
FLOODWAY
FLOODWAY FRINGE
STREAM CHANNEL
FLOOD ELEVATION WHEN CONFINED WITHIN FLOODWAY
ENCROACHMENT
ENCROACHMENT
C
D
SURCHARGE*
A
B
AREA OF FLOOD PLAIN THAT COULD BE USED FOR DEVELOPMENT BY RAISING GROUND
FLOOD ELEVATION BEFORE ENCROACHMENT ON FLOOD PLAIN
LINE A - B IS THE FLOOD ELEVATION BEFORE ENCROACHMENT
LINE C - D IS THE FLOOD ELEVATION AFTER ENCROACHMENT
*SURCHARGE NOT TO EXCEED 1.0 FOOT (FEMA REQUIREMENT) OR LESSER AMOUNT IF SPECIFIED BY STATE

FLOODWAY SCHEMATIC

Figure 2

Average Difference Between 10- and 100-Year Floods	Variation
Less than 2 feet	0.5 foot
2 to 7 feet	1.0 foot
7.1 to 12 feet	2.0 feet
More than 12 feet	3.0 feet

The locations of the reaches determined for the flooding sources of the City of Greensburg are shown on the Flood Profiles (Exhibit 1) and summarized in Table 3.

5.2 Flood Hazard Factors

The Flood Hazard Factor (FHF) is used to establish relationships between depth and frequency of flooding in any reach. This relationship is then

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FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1.0% (100-YEAR) FLOOD AND			FHF	ZONE	BASE FLOOD ELEVATION[3] (NGVD)
		10% (10 YR.)	2% (50 YR.)	0.2% (500 YR.)			
Jack's Run							
Reach 1	02	-3.1	-1.0	+3.3	030	A6	Varies
Zeller's Run							
Reach 1	02	-1.0	-0.3	+0.6	010	A2	Varies
Reach 2	02	-2.5	-0.8	+2.1	025	A5	Varies
Reach 3	02	-1.5	-0.4	+1.0	015	A3	Varies
Reach 4	02	-2.3	-0.4	+0.8	025	A5	Varies
Reach 5	02	-0.4	-0.2	+0.5	005	A1	Varies
Tributary No. 5							
Reach 1	02	-1.1	-0.3	+0.6	010	A2	Varies
Reach 2	02	-0.8	-0.2	+0.5	010	A2	Varies

[1]Flood Insurance Rate Map Panel
[2]Weighted Average
[3]Rounded to the nearest foot - see map

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF GREENSBURG, PA
(WESTMORELAND CO.)

FLOOD INSURANCE ZONE DATA

JACK'S RUN - ZELLER'S RUN - TRIBUTARY NO. 5

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used with depth-damage relationships for various classes of structures to establish actuarial insurance rate tables.

The FHF for a reach is the average weighted difference between the 10- and 100-year flood water-surface elevations rounded to the nearest one-half foot, multiplied by 10, and shown as a three-digit code. For example, if the difference between water-surface elevations of the 10- and 100-year floods is 0.7 foot, the FHF is 005; if the difference is 1.4 feet, the FHF is 015; if the difference is 5.0 feet, the FHF is 050. When the difference between the 10- and 100-year flood water-surface elevations is greater than 10.0 feet, it is rounded to the nearest whole foot.

5.3 Flood Insurance Zones

Flood insurance zones and zone numbers are assigned based on the type of flood hazard and the FHF, respectively. A unique zone number is associated with each possible FHF, and varies from 1 for a FHF of 005 to a maximum of 30 for a FHF of 200 or greater.

Zone A:	Special Flood Hazard Areas inundated by the 100-year flood, determined by approximate methods; no base flood elevations shown or FHFs determined.
Zones A1, A2, A3, A5, and A6:	Special Flood Hazard Areas inundated by the 100-year flood; with base flood elevations shown, and zones subdivided according to FHFs.
Zone B:	Areas between the Special Flood Hazard Areas and the limits of the 500-year flood; areas that are protected from the 100- or 500-year floods by dike, levee, or other water control structure; areas subject to certain types of 100-year shallow flooding where depths are less than 1.0 foot; and areas subject to 100-year flooding from sources with drainage areas less than 1 square mile. Zone B is not subdivided.
Zone C:	Areas of minimal flooding; not subdivided.

Flood elevation differences, FHFs, flood insurance zones, and base flood elevations for the flooding sources studied in detail in the community are shown in Table 3.

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5.4 Flood Insurance Rate Map Description

The Flood Insurance Rate Map for the City of Greensburg is, for insurance purposes, the principal result of the Flood Insurance Study. This map contains the official delineation of flood insurance zones and base flood elevations. Base flood elevation lines show the locations of the expected whole-foot water-surface elevation of the base (100-year) flood. The base flood elevations and zone numbers are used by insurance agents, in conjunction with structure elevations and characteristics, to assign actuarial insurance rates to structures and contents insured under the National Flood Insurance Program.

6.0 OTHER STUDIES

Flood Insurance Studies for the Township of Hempfield and the Borough of Southwest Greensburg are currently being revised (References 14 and 15). The results of those studies will be in complete agreement with the results of this study.

Flood protection projects have been proposed for two tributaries of Jack's Run (References 4 and 5). These projects are not funded at this time or anticipated to be funded in the near future.

7.0 LOCATION OF DATA

Information concerning the pertinent data used in preparation of this study can be obtained by contacting the Natural and Technological Hazards Division, Federal Emergency Management Agency, Regional Director, Region III Office, Curtis Building, Room 700, Sixth and Walnut Streets, Philadelphia, Pennsylvania 19106.

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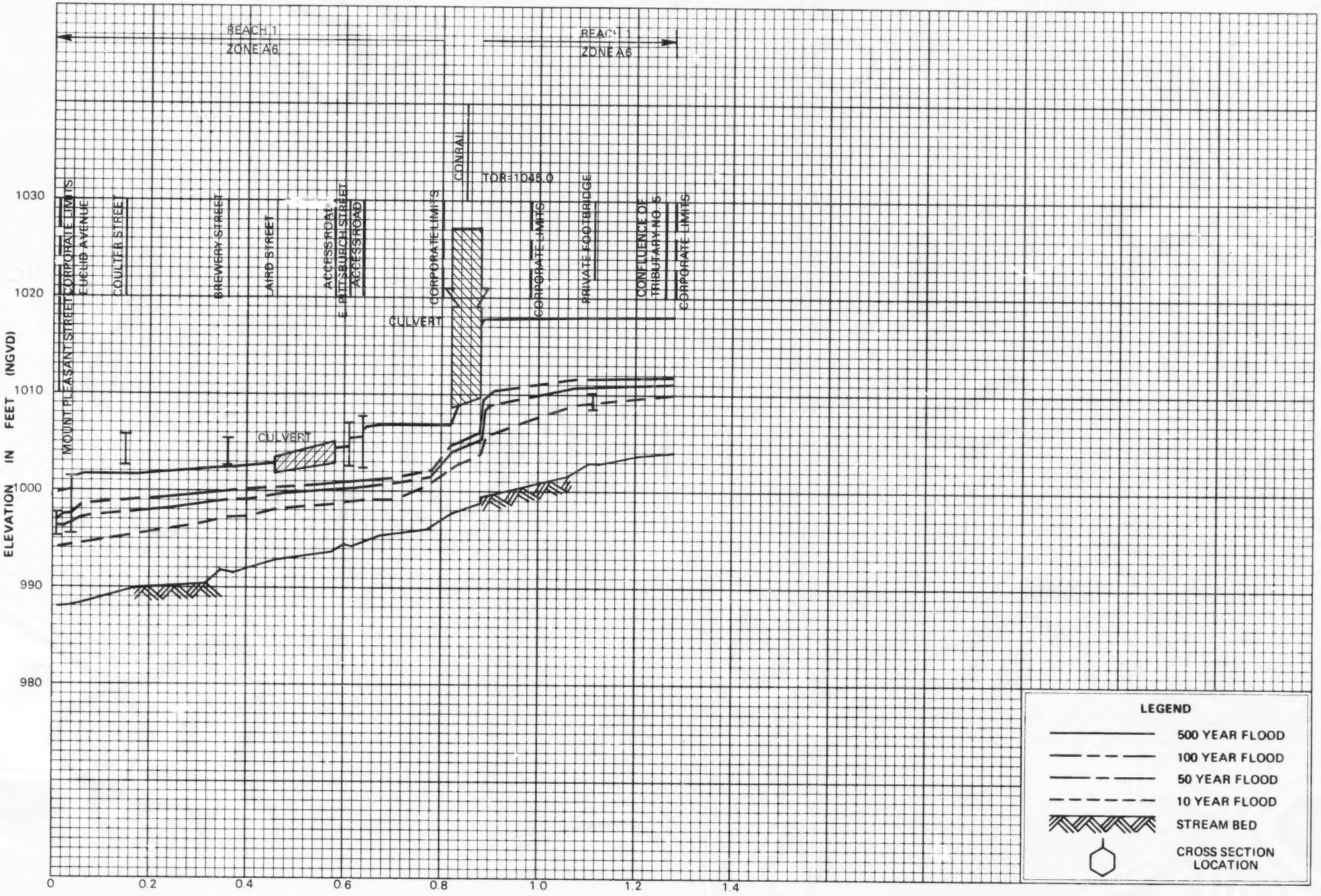

FLOOD PROFILES

JACK'S RUN

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF GREENSBURG, PA
(WESTMORELAND CO.)

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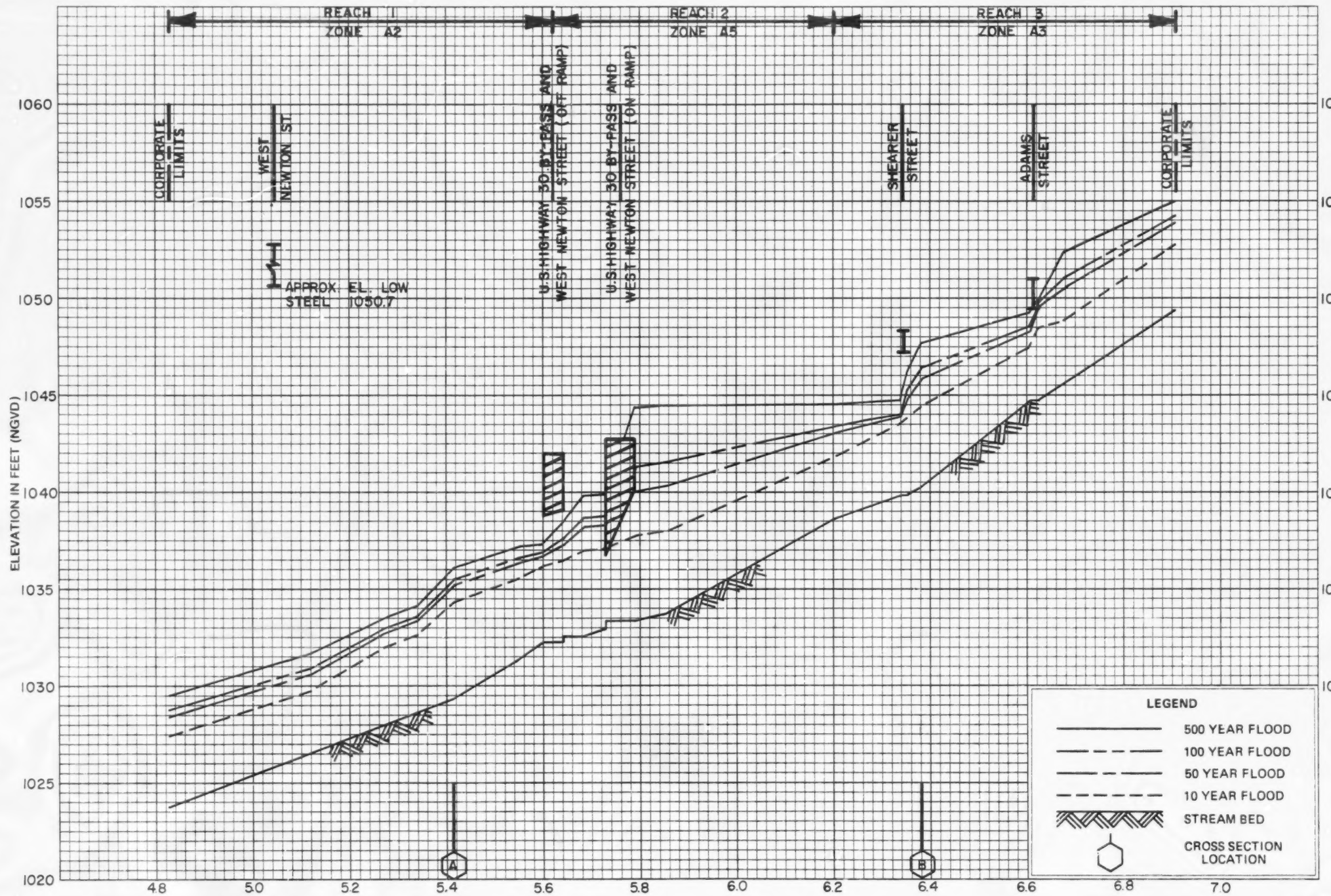

FLOOD PROFILES

ZELLER'S RUN

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF GREENSBURG, PA
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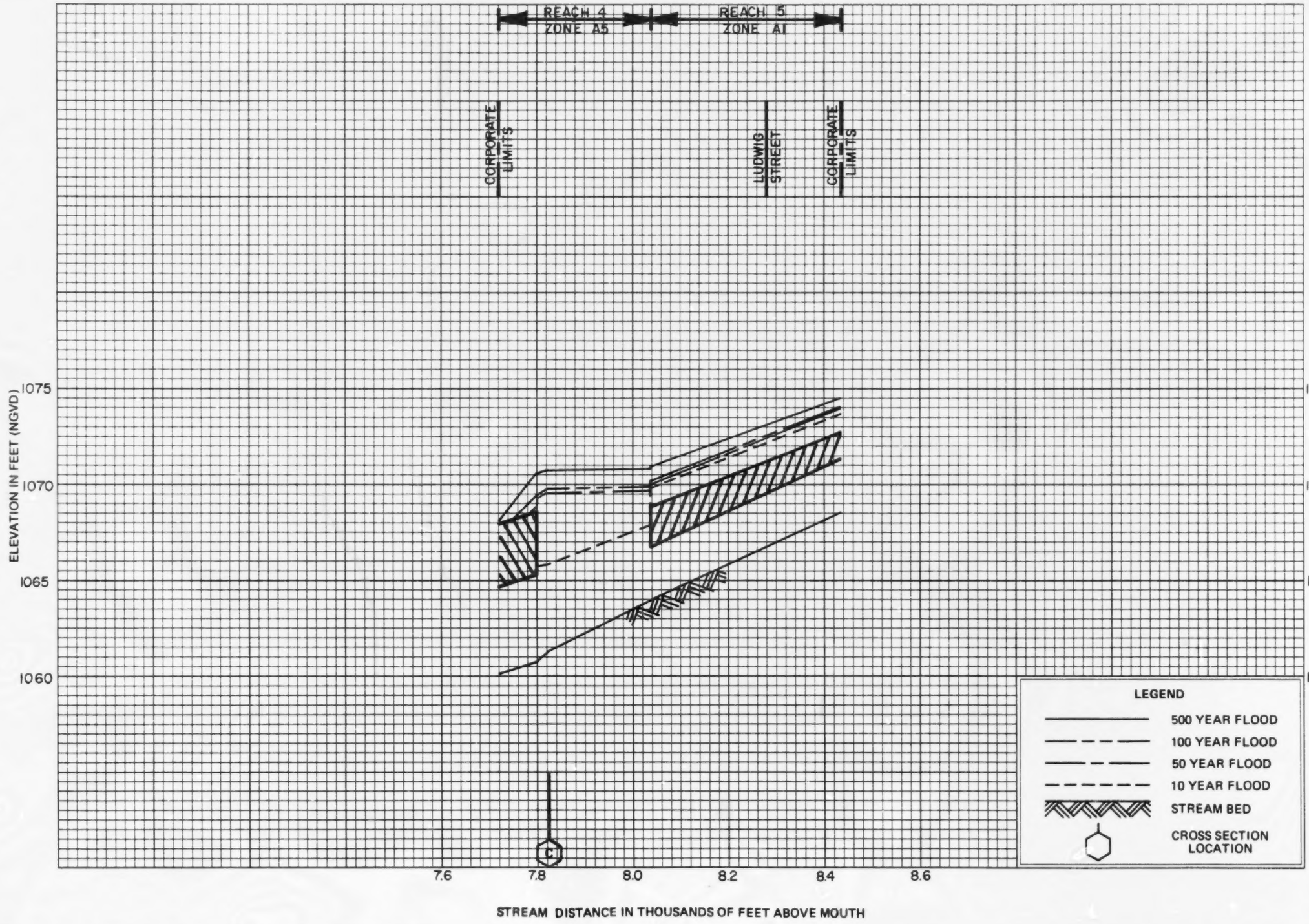

FLOOD PROFILES

ZELLER'S RUN

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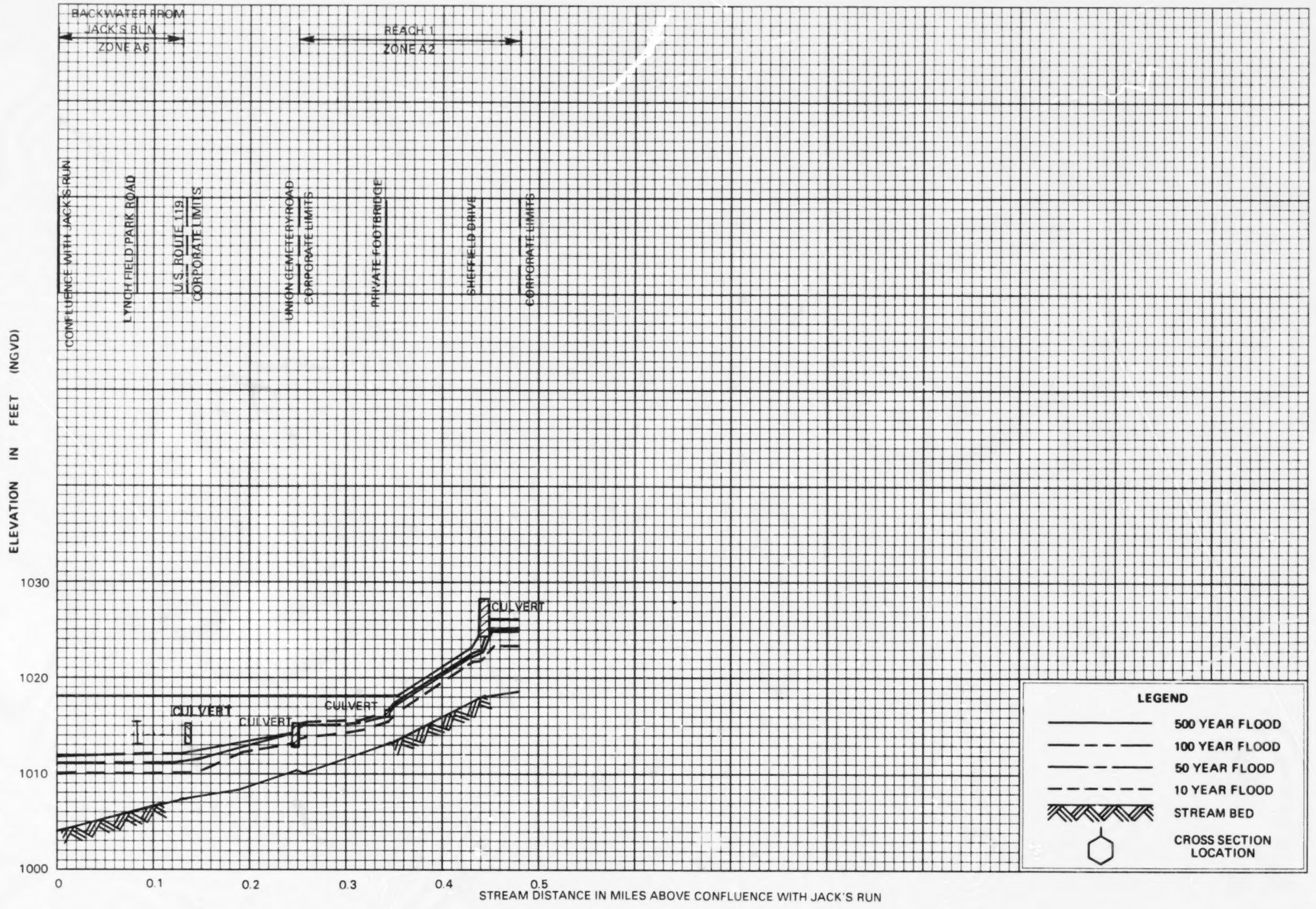

FLOOD PROFILES

TRIBUTARY NO. 5

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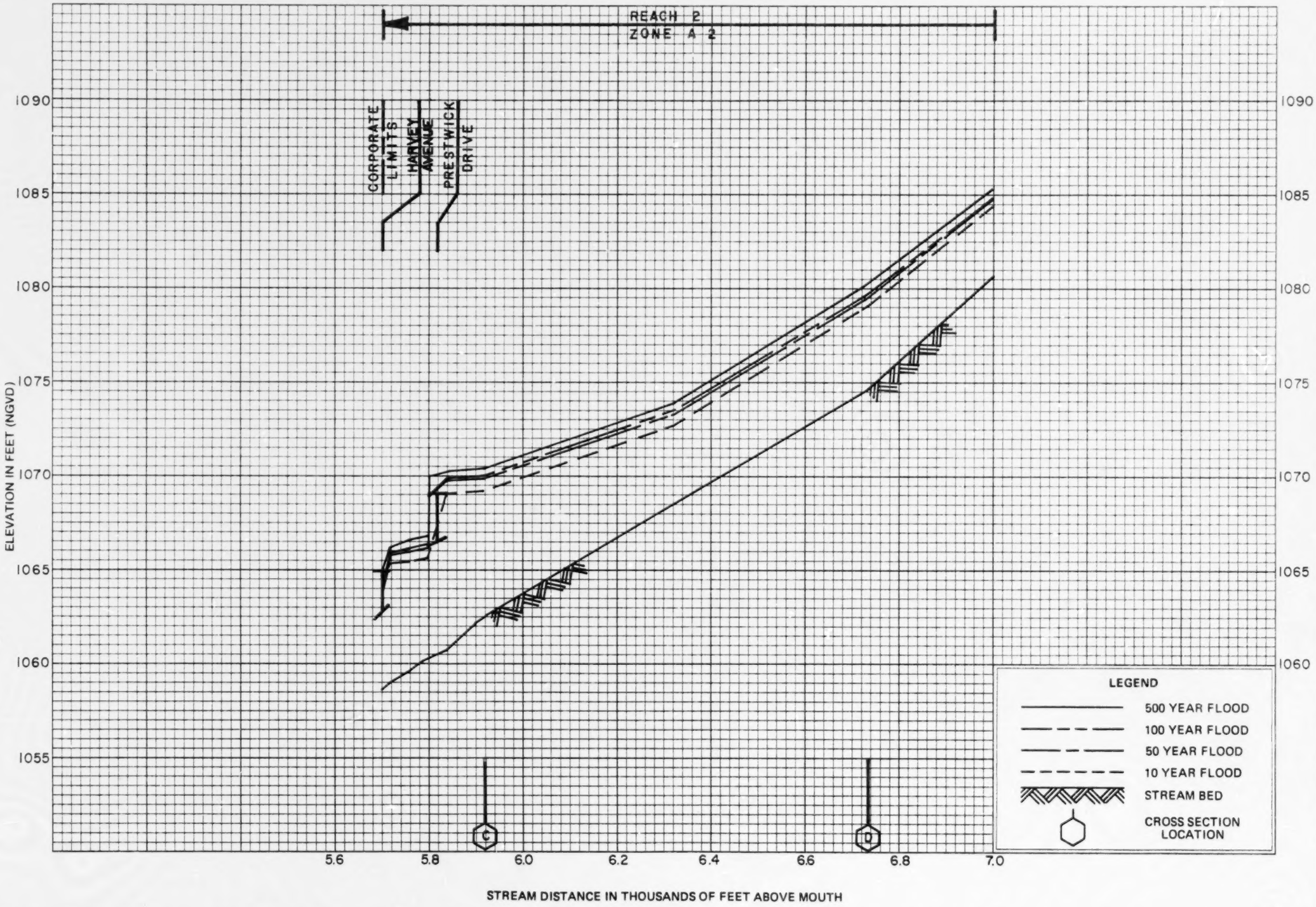

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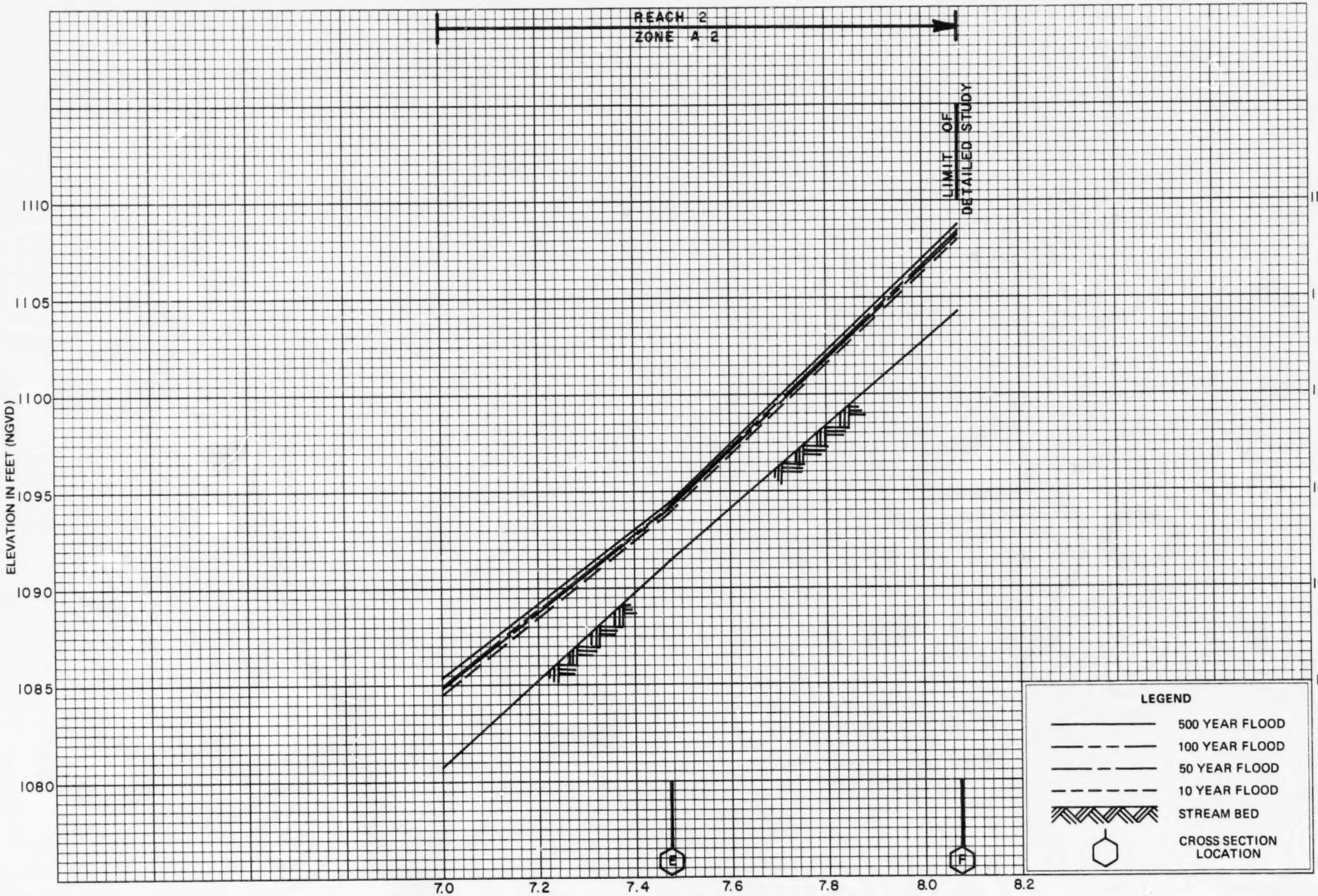

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